

**THEORETICAL MECHANICS**

(name of the discipline)

**annotation****TO THE CURRICULUM OF A HIGHER EDUCATION INSTITUTION**

**Specialties** 6-05-0714-02 "Mechanical engineering technology, metal-cutting machines and tools"; 6-05-0714-03 "Engineering and technical design and production of materials and products made from them"; 6-05-0713-04 Automation of technological processes and productions; 6-05-0722-05 Production of products based on three-dimensional technologies; 6-05-0611-01 "Information systems and technologies"

**Specializations** "Machine building technology"; "Technological equipment of machine building production"; "Equipment and technologies of highly efficient material processing processes"; "Equipment and technology of welding production"; "Automated electric drives"; "Automation of technological processes and productions in mechanical engineering"; "Information systems and technologies in design and production"

	Form of higher education		
	Full-time (full-time)	Part	-time Part-time shortened
Course	1,2	1,2	1
Semester	2,3	2,3	1
Lectures, hours	50	10	6
Practical (seminar) classes, hours	50	10	6
Classroom control work (semester, hours)	—	3rd semester (2 hours)	—
Credit, semester	2	2	1
Exam, semester	3	3	—
Number of classroom hours in the academic discipline	100	22	12
Independent work, hours	116	194	202
Total hours in the academic discipline / credits	216/6		

Specialty 7-07-0732-1 "Construction of buildings and structures"

Specializations "Industrial and civil construction", "АвтомобильныеHighways"

	Form of higher education		
	Full-time (full-time)form of higher education	Part	-time Part-time shortened
Course	1,2	2	1
Semester	2,3	4	1
Lectures, hours	68	14	8
Practical (seminar) classes, hours	50	10	4
Classroom control work (semester, hours)		3 semester(2 hours)	-
Credit, semester	3	4	1
Exam, semester	2	3	-
Classroom hours in the academic discipline	118	26	12
Independent work, hours	98	190	204
Total hours in the academic discipline / credits	216/6		

1. The purpose of the discipline "Theoretical Mechanics" is to study the basic concepts, laws and methods of theoretical and analytical mechanics and their application to study the dynamics of machines and their calculation methods, as well as to build mathematical models of machines used in computer-aided design and forecasting.

### 2. Learning outcomes

- know the basic theoretical principles of statics, kinematics and dynamics of a material point and a solid body; calculation methods for static and dynamic systems, components and mechanisms of machines.
- be able to apply the basic laws and theorems of mechanics to solve applied engineering problems; make computational mathematical models of machines using computer technology to solve and analyze them.
- have the ability to apply the methods used in mechanics to describe mechanical systems; apply the laws and methods of mechanics to analyze complex mechanical systems; build mathematical models of mechanical systems.

### 3. Emerging competencies

6-05-0714-02 Mechanical engineering technology, metal cutting machines and tools

Specializations : "Technology of Mechanical engineering"

"Technological equipment of machine-building production"

"Equipment and technologies for highly efficient material processing processes"

BOD-5 must present basic diagrams of mechanisms for solving engineering problems, master methods for calculating static and dynamic systems, and normalize the accuracy of machine parts to ensure the required quality of machines and mechanisms

BOD-5.1 Anduse knowledge of the basic theoretical principles of statics, kinematics and dynamics of mechanical systems, possess methods for calculating the stability and vibrations of static and dynamic systems for calculating machine parts and mechanisms

6-05-0714-03 Engineering and technical design and production of materials and products made from them

Profilization "Equipment and technology of welding production"

SK-17 allows you to develop and use graphic and technical documentation, solve engineering problems based on the laws of mechanics

6-05-0713-04 Automation of technological processes and production facilities

Profilizations: "Automated electric drives"

"Automation of technological processes and productions in mechanical engineering"

BOD-3 allows you to develop and use graphic and technical documentation, solve engineering problems based on the laws of mechanics

6-05-0722-05 Production of products based on three-dimensional technologies

BOD-5 is able to understand the basic theoretical principles of kinematics and dynamics for understanding the principles of the device of mechanisms and machines and their analytical research, be able to develop and analyze kinematic schemes of mechanisms and machines

6-05-0611-01 Information Systems and Technologies

Specialization "Information systems and technologies in design and production"

SK-4      anduse the basic laws of natural science disciplines in their professional activities

7-07-0732-1 "Construction of buildings and structures"

ПрофилизацияIndustrial and Civil Engineering specialization

ПрофилизацияProfile "Highways"

BOD-5      applythe laws of kinematics and dynamics to perform engineering calculations

4. Requirements and forms of current and interim certification. When studying the discipline, the following forms of independent work are used:

- solving tasks set in practical classes;
- preparation for the rating control of knowledge in theory;
- performing individual tasks developed at the department.